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Technological and feasibility machine UNIT IN CONDUCTING care of crops When growing crops

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The article deals with improving the implementation of biological plant capacity by effective use of agricultural machines that have a significant impact on the efficiency of growing crops.

Agricultural Machinery, Quality, conservation of biological productivity.

Problem. The problem is that during the care of crops to choose rational agricultural a machine that has a high performance, low cost and maximize provides optimal conditions for crop growth and development of seed.

Analysis of recent research. The technology for crop production mechanization processes stands out.

In scientific studies Pogorelogo LV [1] Natanzon IY [2] Finn EA [3,4] Didenko NK [5] Miller II [6] And others have been deeply studied the question of acquisition of machine units to justify rational systems of machines and machinery. Methods rational justification of the complex machinery for the production of crops according to different criteria optimization, but little attention is paid to the quality of performance mechanized manufacturing operations.

This study VG Myronenko showed that, for example, the quality of care for the crops gives increase to 30% [7]. Today, more than ever, the question of updating the machine park farms. According to the research YM Mikhailovich number of tractors capable of 2003 decreased by one third and now stands at almost 100 thousand. Units. Also found that existing farms in agricultural machinery

have optimal storage conditions, which reduces their lifetime [8]. A. Research Demo found that the number of harvesters is not well suited, and available - very old and worn out, leading to a reduction in yield when harvesting crops [9]. From that, how much performance as machine units will meet the requirements of agricultural crops will depend on the

effectiveness of renovation machinery, and thus the effectiveness of management, environmental impact and legacy future generations.

The purpose of research is to present methodology for assessing the conformity of agricultural Machine optimal conditions for plant development and comparison of different machine units in the technical and economic indicators.

Results. In terms of industrialization of agriculture, introduction of new technology and intensive technologies important reserve increase gross yield of crops and reduce the loss of production is the proper use of machine components and improve the quality of implementation of mechanized field work [10].

Each seed agricultural Culture has a maximum rate of biological productivity. And whatever was progressive technology of crop production, increase productivity beyond biological not possible. Therefore, it is advisable to talk only about maximum biological yield of crops. The determining factor in this is to provide "comfort" in the growth and development of plants. This is achieved through the creation of healthier each indicator that provides agricultural machine (Table. 1). The same process can be characterized by several parameters. Thus, the quality of soil harrowing assessed in depth, uniformity of depth vyrivnennosti surface, no flaws, quality finishes headlands and field edges, etc. [7,11,12].

As a result of years of research Institute of Agriculture Northeast NAAS Ukraine, implementation of mechanized manufacturing operations, according to ahrovymoh and set ahrostroky gives gross harvest equal mark-derived from the introduction of intensive technologies of growing crops. On the basis of research scientists and agronomists Institute of Agriculture Northeast NAAS Ukraine and SNAU and on the basis of their research, the analysis of all parameters specific to each technology mechanized operations preplant tillage and sowing established ones that most significantly affect the conservation yields and held their ranking (figures are presented for the degree of impact on productivity and conservation, accordingly, they awarded points). The quality of the work of nine scored on a scale. Depending on the number of points assessed work as follows: 8-9 points - well, 6-7 - well, 4-5 - satisfactory, 3 points or less - poor.

1. data to determine the quality of mechanized manufacturing operations in the care of the crops.

Number n \ n	Operations	Performance	Norms	Scores
1	Pre-emergence	Deviations average actual depth of soil loosening depth of seeding, cm	2 2-1	2 1

	harrowing		Less than 1	0
		The fragility of the soil (surface fraction occupied lumps than 5 cm in diameter),%	Up to 10	4
			10-15	2
			More than 15	1
		Uniformity of the surface field (average height of crests), see	Up to 4	3
			4-5	1
			More than 5	0
		Damage to crops (percentage of plants destroyed during the harrowing),%	Up to 2	3
			2-4	2
			More than 4	1
2	The harrowing post-	Flaws (untreated area),%	Up to 2	3
			2-3	2
			More than 3	1
		The fragility of the soil (surface fraction occupied lumps than 5 cm in diameter),%	Up to 7	3
			7-15	2
			More than 15	1
3	Spring feeding	Deviations from the actual doses of prescribed,%	± 5	4
			± 10	3
			± 15	1
			More ± 10	0
		The uneven distribution of batteries,%	± 10	3
			± 15	2
			More than ± 15	0
		Overlap joints,%	± 5	2
			5-10	1
			10-15	0
4	Adding plant protection products	Deviations from the actual doses of pesticides from the set,%	± 5	4
			± 5-10	2
			More than ± 10	1
		The uneven distribution of pesticides%	± 5	2
			± 5-15	1
			More than ± 15	0
		Deviations of the actual distance between adjacent passes of a given unit,%	± 5	2
			± 5-10	1
			More than ± 10	0

Quality of the field work depends on the design features of agricultural Machinery and compliance technology operations, adjusting parameters and technical condition of the car, as well as working conditions, physical and mechanical properties of soil, terrain, plant stand density, quality of variability across different technical condition of the car and soil conditions at the stage of preliminary operations , performance, caused by subsequent processes of soil.

For each indicator set tolerance (tolerance). To justify the tolerances used experimental data of research institutions and

mashynovyprobuvalnyh stations [13,14,15,16].

Table. 1 shows the performance standards and determine the quality of performance mechanized manufacturing operations for growing agricultural crop and scale of assessment.

To analyze the dependence of technical and operational indicators and indicators of quality of machine aggregates of soil and climatic conditions and farming conditions were used modern power tools and agricultural machines used in growing crops.

In order to approximate calculations based on data from actual conditions on the forest-steppe zone of Ukraine, which is characterized estrus length 800 m, distance journeys within the sector and 5 km distance journeys outside the farm 20 km.

When calculated was examined work machine units, composed of energy resources and agricultural machines in accordance with technological operations care of crops. Table 2 shows the results of a study of technical and economic indicators and indicators of quality agricultural machines that are now commonly used at the cultivation of agricultural cultures. Technical and economic parameters were obtained through the method of "Integrated mashynovykorystannya", which was developed under the guidance of Professor Miller II This method provides a combined solution to the problem of justification warehouse complex machines [17]. The method of "Integrated mashynovykorystannya" consists of six sub-programs FMU, FORAG, TAU, PRIMA, STROKY, GSMSS, which together allow justify rational structure of machine units.

This method takes into account a large number of factors influence the rational justification for machines and systems are adapted to modern conditions in comparison with others.

2. The determination of conditions to ensure the growth and development of agricultural plants machines in the performance of caring for the crops.

Number p / p	Manufacturing operations	Agricultural machine-parameter	Ensuring the conditions of growth and development of agricultural machines	Indicator	Point	Rating
1	Harrowing to ladder	Harrow light spring BLP-9	Deviations average actual depth of soil loosening depth of seeding, cm	1-1.5	2	7
			The fragility of the soil (surface fraction occupied lumps than 5 cm in diameter),%	10-17	2	
			Uniformity of the surface field (average height of crests), see	1-2	3	
		With spring tooth harrow-FZ 15.2	Deviations average actual depth of soil loosening depth of seeding, cm	1-2	2	9
			The fragility of the soil (surface fraction occupied lumps than 5 cm in diameter),%	7.6	4	
			Uniformity of the surface field (average height of crests), see	1.8	3	
		Harrow spring broadly capture BPSH-8	Deviations average actual depth of soil loosening depth of seeding, cm	1.1	2	9
			The fragility of the soil (surface fraction occupied lumps than 5 cm in diameter),%	8.3	4	
			Uniformity of the surface field (average height of crests), see	1-3	3	
1	Harrowing after ladder	Harrow light spring BLP-9	Damage to crops (percentage of plants destroyed during the harrowing),%	0-1	3	8
			Flaws (untreated area),%	0-2	3	
			The fragility of the soil (surface fraction occupied lumps than 5 cm in diameter),%	10-17	2	
		With spring tooth harrow-FZ 15.2	Damage to crops (percentage of plants destroyed during the harrowing),%	1-3	3	9

			Flaws (untreated area),%	0-0,7	3	
			The fragility of the soil (surface fraction occupied lumps than 5 cm in diameter),%	7	3	
		Harrow spring broadly capture BPSH-8	Damage to crops (percentage of plants destroyed during the harrowing),%	2.5	2	7
			Flaws (untreated area),%	2.3	2	
			The fragility of the soil (surface fraction occupied lumps than 5 cm in diameter),%	0.9	3	
2	Spring feeding	Fertilizer spreader Axis 30.1	Deviations from the dose of,%	9.8	3	6
			Uneven application of fertilizers,%	12.6	1	
			Overlap joints,%	10.1	2	
		Fertilizer spreader RD-500	Deviations from the dose of,%	0.2	4	7
			Uneven application of fertilizers,%	14.9	1	
			Overlap joints,%	13.2	2	
		Fertilizer spreader VICON	Deviations from the dose of,%	5.8	3	7
			Uneven application of fertilizers,%	12.5	1	
			Overlap joints,%	7.2	3	
3	Adding plant protection products	Sprayer napivprychipnyy OKN-18	Deviations from the actual doses of pesticides from the set,%	3.4	4	8
			The uneven distribution of pesticides%	1.2	2	
			Deviations of the actual distance between adjacent passes of a given unit,%	1-2	2	
		Sprayer semi tion OPC-2000	Deviations from the actual doses of pesticides from the set,%	4.5	4	8
			The uneven distribution of pesticides%	2.1	2	
			Deviations of the actual distance between adjacent passes of a given unit,%	2	2	
		Sprayer semi-ing rod OPSH-2000-21,6	Deviations from the actual doses of pesticides from the set,%	22.6	1	5
			The uneven distribution of pesticides%	2	2	
			Deviations of the actual distance between adjacent passes of a given unit,%	5	2	

By the ladder harrowing crops. Harrowing - one of the techniques of surface tillage harrows. It is used to retain moisture in the soil, destruction of soil cover and ladder young weeds, raking plant residues, improve soil aeration, "refreshing" of winter and early spring perennial grasses on the slope, development and preparation for sowing tillage.

Harrow are in the spring and fall. To determine the optimal harrowing important time, as soil moisture should be high enough to make it to save it, but one that allows tractors to go into the field.

In spring and summer plowing farmland harrowed followed by plowing. Winter plowing and harrowed in early spring, when the soil is no longer smear and crumbles easily the blow job of spike-tooth harrow, and couples also in subsequent cultivation in summer.

By the ladder harrowing spend 4-7 days after sowing, but no later than 3 days prior to germination of peas. In favorable conditions, can be destroyed almost 80% of weeds in phase white strings. You can not spend a harrowing moment in germination [18].

3. Technical and economic parameters of units for up ladder harrowing.

Machine aggregates	Sobivar-dough USD. / Ha (t, TKM)	Costs of working time, h / ha (t, TKM)	Productivity of the PL-unit, H (t, TKM) / h	Fuel consumption, kg / ha (T, TKM)	Your nickname-quality
HTZ-17021 + BLP-9	54.49	0.29	6.90	2.05	7
UMZ-8240 15.2-FZ +	33.03	0.29	6.79	1.13	9
Bilous 892+ BPSH-8	89.01	0.45	4.49	1.59	9
T-150K-09 + BLP-9	56.96	0.28	7.04	2.13	7
UMZ-8240 + BPSH-8	86.59	0.45	4.45	1.55	9
Bilous 892-FZ + 15.2	34.69	0.29	6.85	1.14	9

From the analysis of Table 3 shows that in terms of cost performance machine technological operation units Bilous 892 + BPSH-8 UMZ-8240 + BPSH-8 are high. However, their productivity is low. Machine units HTZ-17021 + BLP-9, UMZ-8240 + FZ-15,2, T-150K-09 + BLP-9, Belarus FZ-892 + 15.2 at a lower cost provide higher performance. This performance providing conditions for plant growth and development are the same as in other units. They are the best to perform this operation. Is the most optimal UMZ-8240 + FZ-15.2.

After a harrowing ladder crops. After a harrowing ladder conduct such as peas, in a phase 3-5 leaves. Conduct in phase 2-3 leaves when the plants have a height of 4-5 cm. To prevent clipping plants harrowed day not earlier than 11-12 h., In dry weather when the plants lose turgor and less damaged teeth harrows and storms destroyed ' Jana soon dry up. Use medium harrow, which have relatively high teeth and less damaging plants. Number of damaged plants should not exceed 10-12%. For this harrowing carry across to the direction of sowing rate not more than 4-5 km / h. Peas tolerates slight sprinkling earth. After 2-3 days the plants themselves exempt from the ground and then grow well. [1919]

4. Technical and economic parameters of units for after a harrowing flight of stairs.

Machine aggregates	Sobivar-dough USD. / Ha (t, TKM)	Costs of working time, h / ha (t, TKM)	Productivity of the PL-unit, H (t, TKM) / h	Fuel consumption, kg / ha (T, TKM)	Your nickname-quality
HTZ-17021 + BLP-9	53.80	0.29	6.92	2.00	8
UMZ-8240 15.2-FZ +	32.14	0.29	6.84	1.07	9
Bilous 892 + BPSH-8	88.09	0.44	4.51	1.54	7
T-150K-09 + BLP-9	56.22	0.28	7.06	2.07	8
UMZ-8240 + BPSH-8	85.76	0.45	4.47	1.50	7
Bilous 892-FZ + 15.2	33.92	0.29	6.90	1.09	9

From the analysis of Table 4 shows that in terms of cost performance machine technological operation units Bilous 892 + BPSH-8 UMZ-8240 + BPSH-8 are high. However, their productivity is low. Machine units HTZ-17021 + BLP-9, UMZ-8240 + FZ-15,2, T-150K-09 + BLP-9, Belarus FZ-892 + 15.2 at a lower cost provide higher performance while providing the same performance conditions for plant growth and development. They are the best to perform this operation. Is the most optimal UMZ-8240 + FZ-15.2.

Transportation and fertilization.

Application of fertilizer - the most important means of increasing crop yields.

The process of surface fertilization involves loading fertilizers from warehouses (cars) in vehicles transporting them to places spreading and fertilizing the soil.

Mineral fertilizers are mostly soluble ammonia or potassium salt.

The main method of fertilization as organic - spreading over the surface of the field.

Fertilizers should be incorporated into the soil evenly over the entire area of the field [20].

5. Technical and economic parameters of units for fertilization.

Machine aggregates	Sobivar-dough USD. / Ha (T, TKM)	Costs of working time, h / ha (t, TKM)	Productivity of the PL-unit, H (t, TKM) / h	Fuel consumption, kg / ha (T, TKM)	Your nickname-quality
MTZ-82 + Axis30.1	55.21	0.20	5.06	1.54	6
MTZ-920 + RD-500	47.12	0.42	2.41	1.72	7
MTZ-80 + VICON	48.67	0.43	2.31	1.87	7
MTZ-82 RD-500 +	46.97	0.41	2.42	1.78	7
MTZ-920 + VICON	48.54	0.44	2.29	1.72	7
MTZ-80 + Axis30.1	55.10	0.20	5.07	1.56	6
MTZ-82 + VICON	48.27	0.43	2.31	1.78	7
MTZ-920 + Axis30.1	54.66	0.20	5.04	1.44	6
MTZ-80 RD-500 +	47.32	0.41	2.43	1.87	7

From the analysis of Table 5 we see that in terms of the cost of technological operations units are best MTZ-82 + RD-500, while its performance is one of the lowest.

Consider the most performance cars in it: MTZ-82 + Axis 30.1 and MTZ-80 + Axis30.1, while in MTZ-82 + Axis 30.1 more direct operating costs. Thus the best indicators of quality in machine units RD-500 and VICON.

The best machine unit for transport and fertilization is MTZ-920 + Axis 30.1 at high cost has a high performance and low fuel consumption

Adding plant protection products. Pesticides (from Lat. Pestis - the plague, caedo - kill) - chemicals used in agriculture and horticulture and pest (harmful or undesirable microorganisms, plants and animals). A chemical compound that is used for plant protection, agricultural products and vector control dangerous diseases [21].

6. Technical and economic parameters of units for application of pesticides.

Machine aggregates	Sobivar-dough USD. / Ha (T, TKM)	Costs of working time, h / ha (t, TKM)	Productivity of the PL-unit, H (t, TKM) / h	Fuel consumption, kg / ha (T, TKM)	Your nickname-quality
MTZ-82 + OKN-18	31.08	0.16	12.66	1.01	8
UMZ-8240 + OPC-2000	23,03	0.16	12.75	0.93	8
Bilous 892 + OPSH 2000	19.63	0.16	12,63	0.83	5
MTZ-82 + OPC-2000	24.66	0.16	12.66	1.00	8
UMZ-8240 + OPSH 2000	18.98	0.16	12.55	0.85	5
Bilous 892 + OKN-18	30.27	0.16	12.85	0.94	8
MTZ-82 + OPSH 2000	20.42	0.16	12.45	0.90	5
UMZ-8240 + OKN-18	29.36	0.16	12.76	0.93	8
Bilous 892 + OPC-2000	23.90	0.16	12.84	0.93	8

From the analysis of Table 6 found that in terms of cost, performance indicators and providing conditions for plant growth and development of technological operations performance machine units are almost identical. But Bilous 892 units + OPSH-2000, UMZ-8240 + OPSH 2000, MTZ-82 + OPSH 2000 at a lower cost of providing the same performance with lower quality scores. They are best for implementation of technological operations. The most optimal is Belarus 892 + OPSH 2000.

Conclusions

In analyzing manufacturing operations, we have selected and analyzed for each farm machinery manufacturing operations in the care of the crops. Were analyzed as indicators of the relevant units and made economic and technological comparative evaluation.

Each agricultural machines were selected power tools from different manufacturers. It is possible to analyze the technical and operational characteristics of each agricultural machinery at work with a variety of power tools. The analysis showed that the cost of the machine for different units, they can provide a good level of performance and quality.

Since the machine park requires constant technical and technological renewal - an analysis can be used ordinary commodity when choosing rational machine units for a specific agricultural needs.

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Article posvyaschena question Increase Implementation Biology of opportunities plants, putem эffektyvnoho Using agricultural machines, okazыvayuschyh suschestvennoe Effect on the Level of the

effectiveness of agricultural vыiraschyvanyya cultures.

Selskohozyaystvennыe Machines, pokazatel Quality, Saving byolohycheskoy yield.

Paper aimed at improving the opportunities the realization biology bog water through effective uses of machines for rural economy, ones level of effectiveness effect on development of agricultural cultures.

Agricultyral mashines, indicator of quality, preservation byolohycheskoy yield.

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FORMATION OF OPERATIONAL CONTROL OF QUALITY OF BIOMASS PRODUCTION solid biofuels

SV Dragnev, Ph.D.

Proved methods of sampling biomass in terms of agricultural production. Made compulsory for

indicators and methods of quality control systems operational biomass in the production of solid biofuels.

Biomass, sampling, test methods, operational control, Quality, solid biofuel.

Problem. In the production of solid biofuels is important to ensure guaranteed quality biomass of agricultural origin at all stages of the process: collection, transport, storage and processing. Need to operational control of incoming raw materials, intermediates and output, allowing you to quickly and efficiently in terms of agro-industrial production to determine the parameters of biomass as regulatory requirements. This should be used simple techniques that can be implemented without any special training staff to conduct feasibility studies without the use of expensive laboratory equipment and require a minimum amount of the substance.

Analysis of recent research. For the production of heat and electricity use various types of biomass: agricultural, forestry, organic household and industrial waste and energy plantations. Differs from traditional biomass fuels (gas, oil and coal), lower density and calorific value (Fig. 1), seasonality, systems for storage, preparation and supply of boilers larger and more expensive, excessive moisture content,